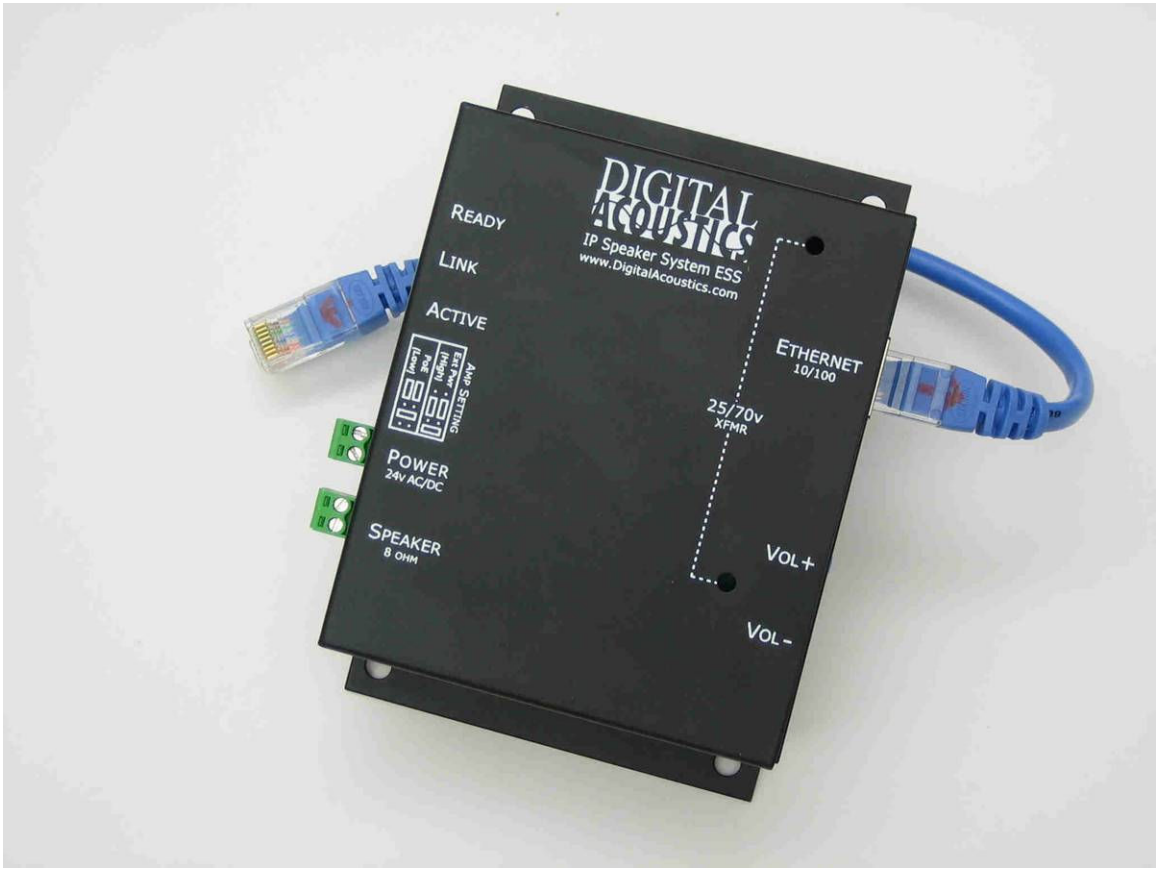
# ii3-ESS
# IP Speaker System




Users' Guide

DIGITAL ACOUSTICS

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# Table of Contents

Overview ..... 1
Specifications ..... 2
25/70 Volt Lines ..... 3
Speaker Configurations ..... 5
  8 Ohm Speaker(s) ..... 5
  25/70V Speaker(s) with optional 25/70V transformer ..... 6
Connections and Controls ..... 8
  Speaker Connection ..... 8
  Power Supply / Amplifier ..... 8
  Network ..... 9
  LED Indicators ..... 9
  Volume Controls ..... 9
Software Configuration ..... 10
Physical Dimensions ..... 11
Software Support ..... 12
Recommended Power Supply for Max (High) Power modes ..... 12
Troubleshooting ..... 13
Technical Support ..... 13

## *Overview*

The Digital Acoustics' ESS IP Speaker System is designed to drive an 8 Ohm speaker load or speakers attached to a 25/70V distribution line (requires optional 25/70V Transformer). Software support is provided by Digital Acoustics' TalkMaster LE™, TalkMaster EE™ or by and 3rd parties supporting Digital Acoustics® technology.

### Features

- IP Addressable
- Lossless audio distribution to endpoint
- Operates over LAN, WAN and Wireless networks
- Powered via PoE or external power supply
- Operates over wide power supply range
- Built in thermal protection
- Volume control via software or onboard controls
- Drives one or several speakers
- Wide selection of speaker configurations including:
    - Horns
    - Weatherproof
    - Ceiling panels
    - Wall panels
    - Vandal proof

## *Specifications*

| | |
|---|---|
| Hardware Protocols | TCP, UDP, DHCP, ARP |
| Network Interface | 10/100 Base-T Ethernet (Auto detection) |
| Command protocols | Digital Acoustics ® Proprietary |
| Network Bandwidth Utilization | 64 khz |
| Audio Resolution | PCM 8bit and uLAW 8bit |
| Frequency Response | 300-4 kHz (Voice band) |
| Power Supply - Low Amp Mode | Power over Ethernet* (PoE 802.3af compatible). Requires maximum 15.4 Watts from PSE |
| | 14-20 VDC @ 20 Watts |
| Low Amp Mode Power Output | 8 Watts Nominal 3%THD |
| Power Supply - High Amp Mode | 24V-28V AC @ 40 Watts |
| | 24V-36V DC @ 40 Watt |
| High Amp Mode Power Output | 18 Watts Nominal 3%THD<br>20 Watts/8Ω 20% THD |
| Load Impedance | 8 Ohms nominal. Limiting range 4-16 Ohms |
| Temperature | 0'C ~ 70'C (Operating), -40~85'C (Storage) |
| Humidity | 10~90% |
| Dimensions | 5.0” x 3.5” x 1.5” |

## *25/70 Volt Lines*

The ii3-ESS can be ordered with an optional 25/70V audio transformer. The optional audio transformer allows the ii3-ESS to driver one or more speakers attached to a 25/70V distribution line. All speakers must have their own 25/70V transformer. This allows the ESS to be located further away (up to 3000 feet with 18 gauge wire) from the speaker(s) and allows an individual speaker's volume to be adjusted using its transformer taps. **When using an ESS with a 25/70V transformer, speakers must always be wired in parallel**.

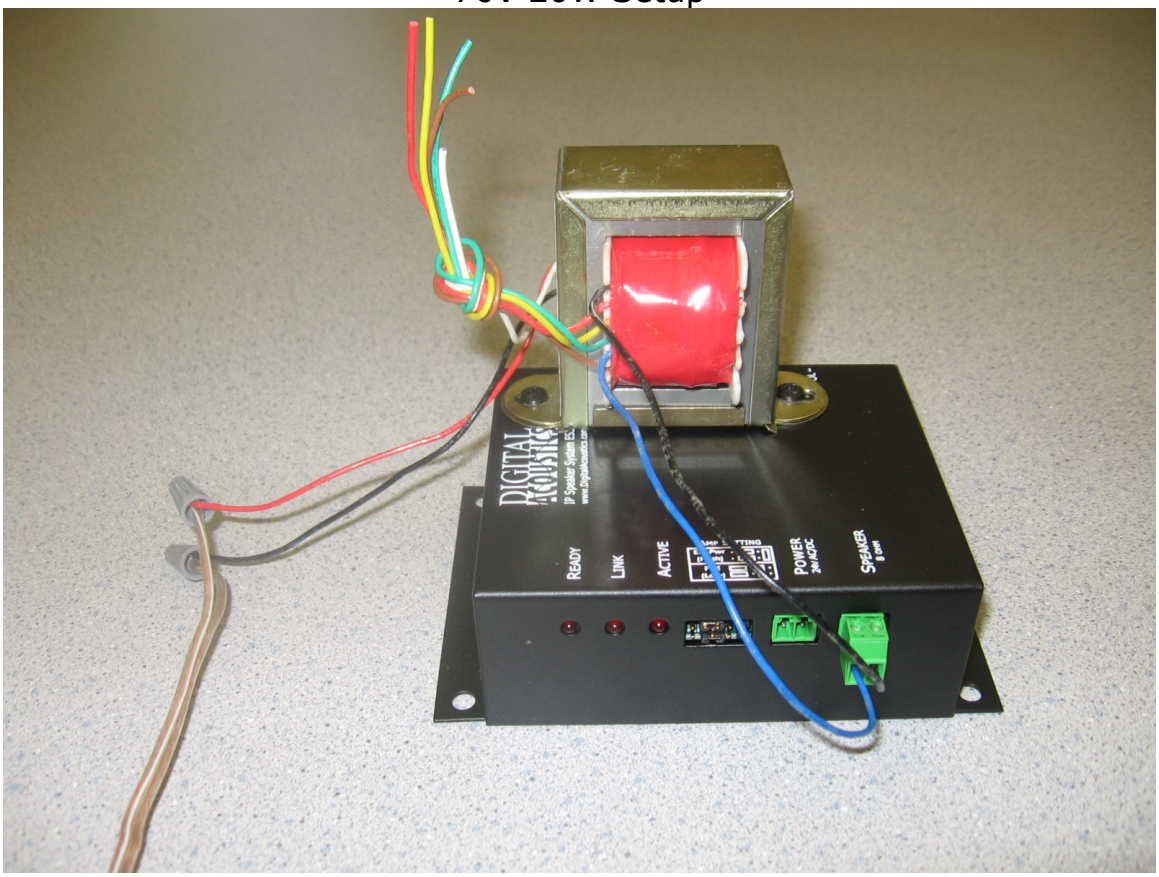
Here is the layout of the transformer taps supplied with the ESS:

| | | | |
|---|---|---|---|
| To Speaker(s) | Black | White | Red |
| | Com | 25V | 70V |
| To ESS | Blue | | Black |
| | 20W | | Com |

To use the optional transformer:

- Connect the transformer to the mounting holes on the top of the ii3-ESS using the included screws (#6-32 x 3/16)
- Connect the transformer leads marked **Blue 20W** and **Black Com** to the included terminal block plug and connect it into to the **Speaker** terminal on the ii3-ESS
- Determine if you will be tapping your speakers for 25V or 70V:
  - For a 25V distribution line and speakers, connect the **White 25V** tap and the lead marked **Black Com** to the speakers
  - For a 70V distribution line and speakers, connect the **Red 70V** tap and the lead marked **Black Com** to the speakers
- Snip off any exposed wire on the unused taps and tie them back

70V 20W Setup



## *Speaker Configurations*

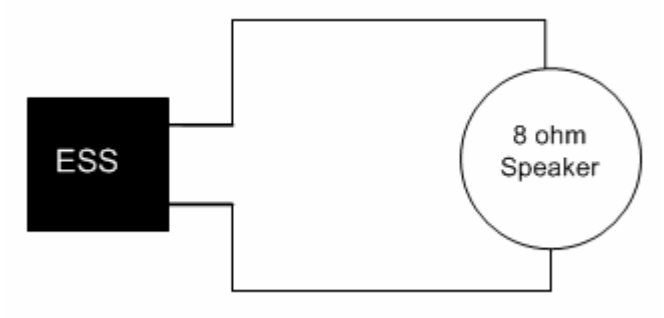
The ii3-ESS is designed to drive an 8 Ohm load or speakers attached to a 25/70V distribution line (requires optional 25/70V Transformer). One or more speakers can be driven by a single ii3-ESS. If more that one speaker is connected to an ii3-ESS, all speakers will sound when audio is sent to that ESS.

Below are the guidelines for attaching 8 Ohm speakers to the ii3-ESS:

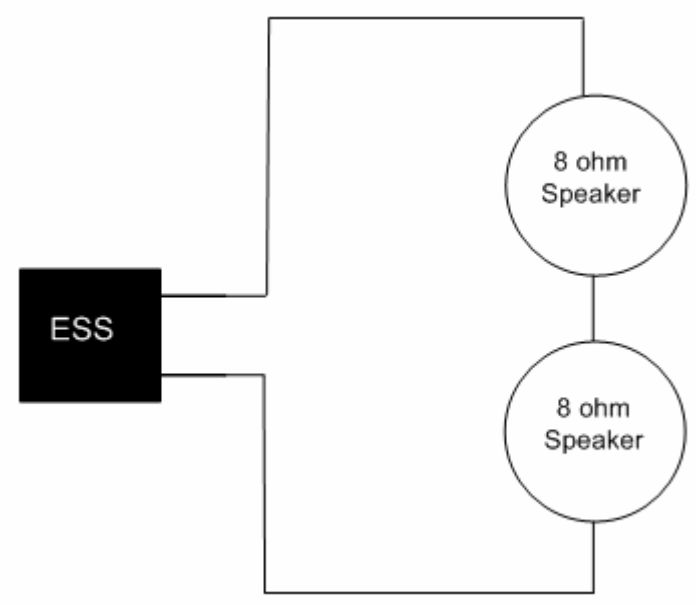
### 8 Ohm Speaker(s)

The following configurations are supported for driving 8 Ohm speakers:

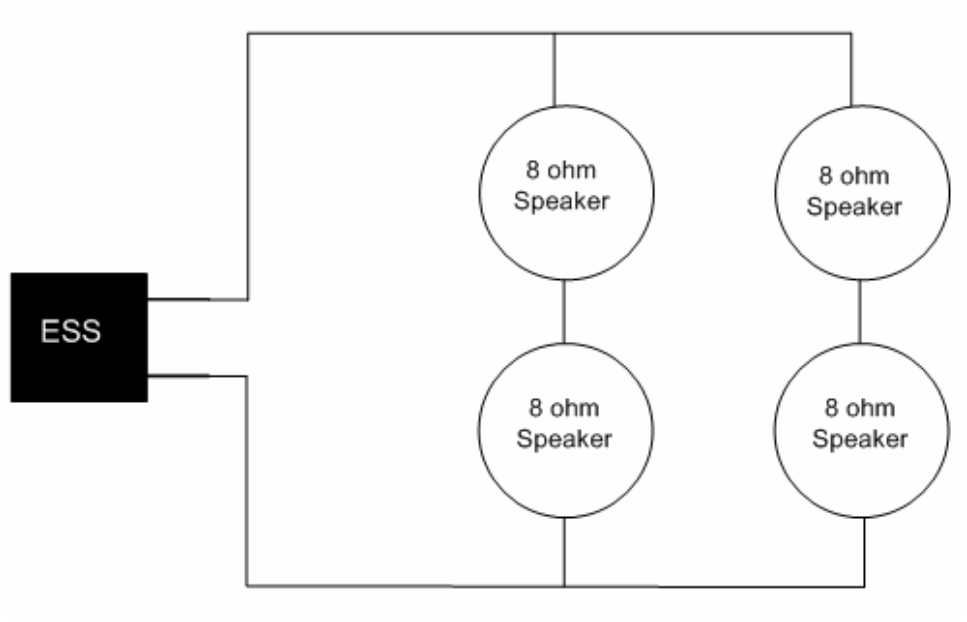
- A single 8 Ohm speaker




- Two 8 Ohm speakers wired in series



- Four 8 Ohm speakers wired in series-parallel

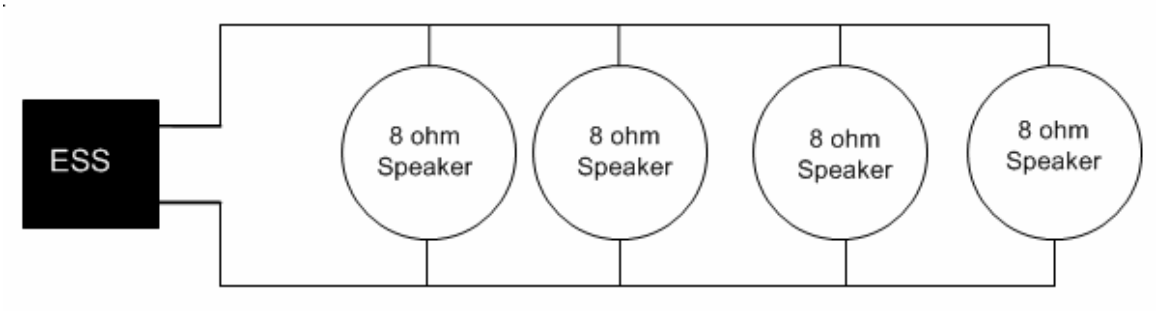



Please note the following guidelines:

- Speakers should be installed within 100 feet (30 meters) of the ESS using 18 gauge wire
- The total amount of wire used in the wiring run should not exceed 200 feet (60 meters)
- The total watts available from the ESS are distributed equally among the speakers.

## 25/70V Speaker(s) with optional 25/70V transformer

The ESS can drive one or more 25/70V Speakers or Horns when equipped with an optional 25/70V transformer. When using 25/70V transformers, all speakers must be wired in parallel.




Please note the following guidelines:

- Each speaker must have its own 25/70V transformer
- Speakers should be installed within 1500 feet (450 meters) of the ESS using 18 gauge wire

- The total wattage available from the ESS must be reduced by 20% to account for line loss
- The total wattage of the selected speaker taps cannot exceed the wattage available from the ESS
- Maintain the same wiring polarity between speakers

## *Connections and Controls*

### Speaker Connection

To connect an 8 Ohm load to the ii3-ESS, connect two wires from the speaker terminals (or 8 Ohm load source) to one of the supplied terminal block plugs and insert it into the **Speaker** connector on the ESS. Speaker connections are polarity independent.

### Power Supply / Amplifier

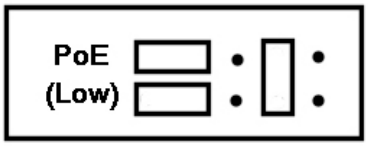
The ii3-ESS supports Power over Ethernet (PoE - 802.3af compatible) or can be powered externally from an external 24V AC/DC 40 Watt power supply. Note that if using PoE, that the Power Source Equipment (PSE) must be capable of supplying the maximum of 15.4 Watts for each ii3-ESS that is connected to it.

Two audio amplifier settings are available. The low setting is 7.5 watts and the high setting is 20 watts. When using PoE, the low amplifier setting must be used. When using an external power supply, either the high or low setting can be used.

Before powering up the ii3-ESS, the jumpers for the Power Supply and Amplifier must be set in the correct position. The Jumpers consist of 5 columns of 2 pins located on the side of the unit labeled as **Amp Setting**.

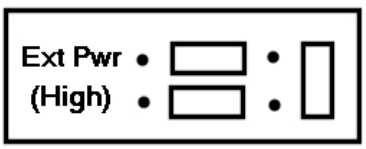
For PoE, the jumpers must be set as follows:

- Two Horizontal jumpers on columns 1 and 2 indicate PoE (802.3af compatible) is supplied via the RJ-45 cable
- One Vertical jumper on column 4 indicates Low Amplifier setting



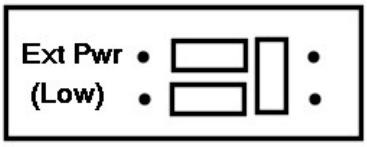

For External Power and high amp setting, the jumpers are set as follows:

- Two Horizontal Jumpers on columns 2 and 3 indicate External power is supplied
- One Vertical jumper on column 5 indicates High Amplifier setting



For External Power and low amp setting, the jumpers are set as follows:

- Two Horizontal Jumpers on columns 2 and 3 indicate External power is supplied
- One Vertical jumper on column 4 indicates Low Amplifier setting




## Network

Connect the RJ-45 connector with a CAT5/5E cable to an available 10/100 Ethernet port on a network switch.

## LED Indicators

Ready - Indicates Server connection state
Link - Indicates network connection
Active - Indicates audio activity

| Description | Ready | Link | Active |
|---|---|---|---|
| Unit is connected to the Server | Solid | Solid | Off |
| Unit is playing audio from the Server | Solid | Solid | Flashing |
| Unit is trying to connect to the Server | Slow Flash | Solid | Off |
| Unit does not have a valid network connection | Any | Off | Any |
| Unit has been discovered by the Intercom Configuration Tool | Fast Flash | On | |
| Unit has not been configured to connect to a Server | Slow Flash | On | On |

## Volume Controls

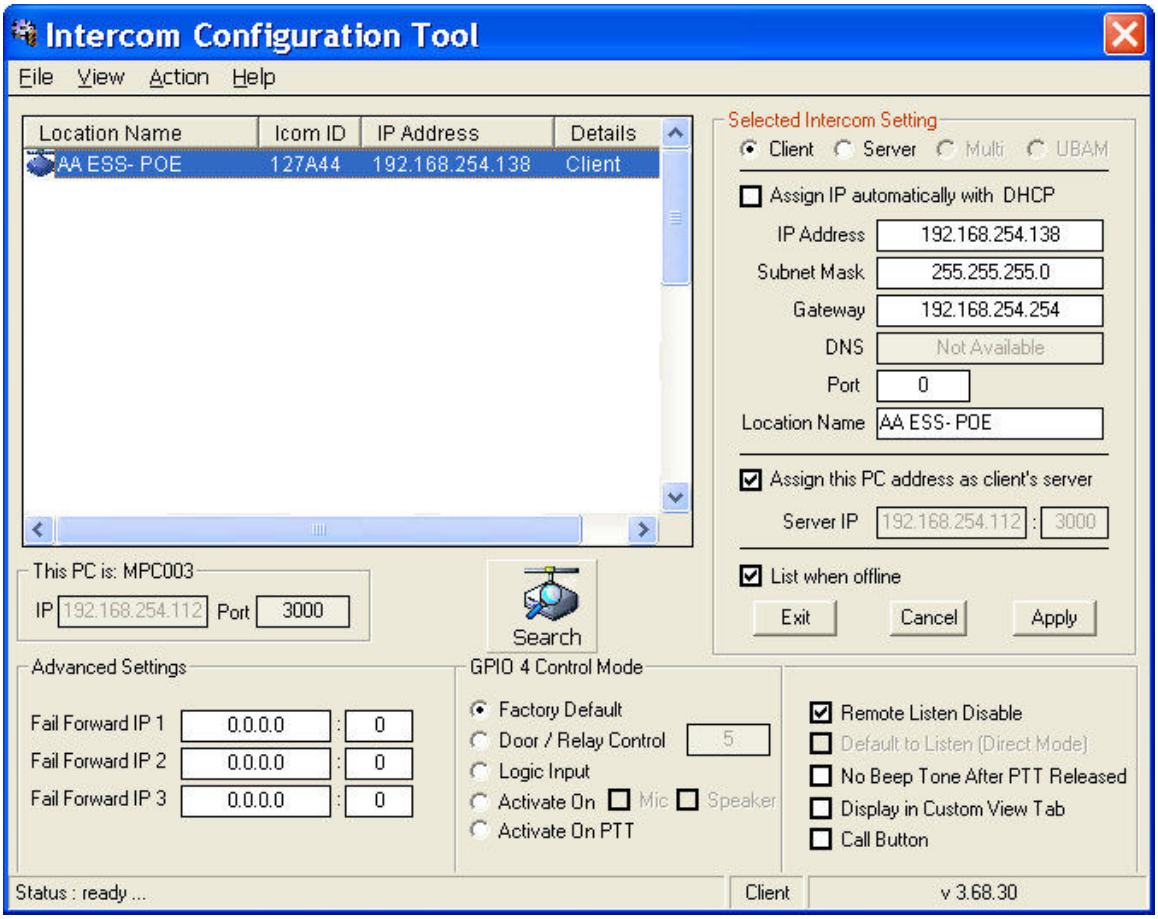
The ESS has seven volume level settings. Pressing the "Vol +" or the "Vol -" seven times sets the unit to its maximum or minimum volume.

To control the volume through software, refer to the documentation included with the software product.

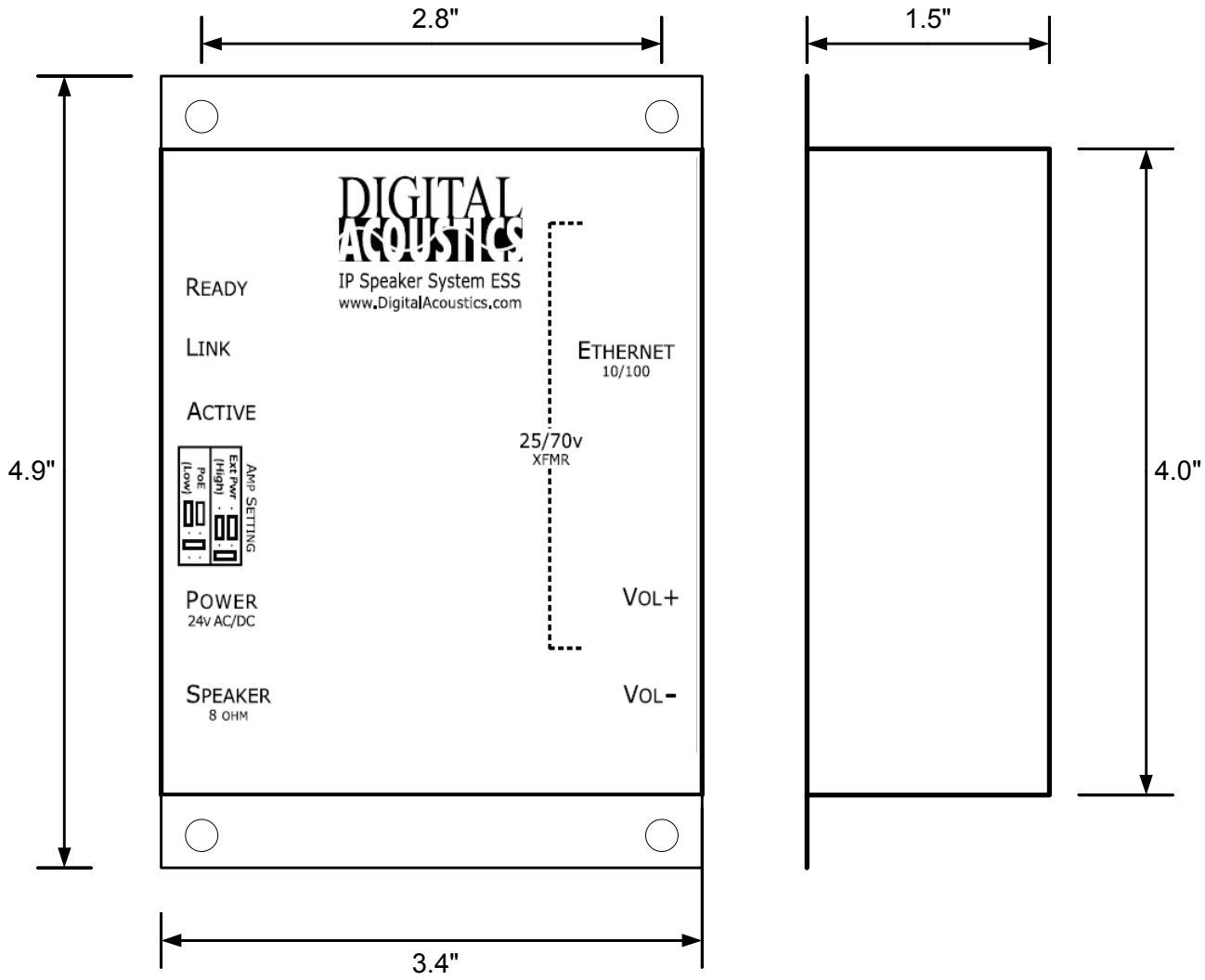
## *Software Configuration*

Using TalkMaster LE or TalkMaster EE - Admin Console:

- Search the network for ii3-ESS modules
- When found, configure the following parameters:
  - Select **Client** mode
  - Specify DHCP or an IP address, Subnet, and Gateway
  - Specify Location Name to uniquely identify the ESS
  - Specify the Server IP address the ESS is to connect to
  - Check the "Remote Listen Disable" option
  - Click **Apply** to save the changes



## *Physical Dimensions*



## *Software Support*

For use with Digital Acoustics' TalkMaster LE or TalkMaster EE, select the "**Remote Listen Disable**" option when configuring the ii3-ESS.

Refer to documentation for 3rd party software that supports Digital Acoustics technology,

## *Recommended Power Supply for Max (High) Power modes*

Class 2 24VAC @ 40 VA (40 W)
Some Examples:
MOUSER AMSECO XF-2440
MOUSER AMSECO XR-2450LED

## *Troubleshooting*

| | |
|---|---|
| Unit will not power up | • Verify the Power Supply / Amp jumpers on the unit |
| Unit will not connect | • Verify that the LINK LED on the unit is on solid<br>• Verify units IP address, subnet mask and gateway<br>• Verify IP Address that the unit is connecting to<br>• Verify the PC that the unit is connecting to is running the proper software |
| Unit will not play audio | • Verify the units Ready and Link LEDs are on solid<br>• Verify the units Active LED flashes when receiving audio<br>• Verify ESS - Speaker connections |

To reset the ESS Configuration back to factory default:

- Unplug the Power
- Press and hold down the Vol + and Vol - buttons
- Plug the power back in
- Wait 2 seconds
- Release the Vol + and Vol - buttons

## *Technical Support*

**Email**: Esupport@digitalacoustics.com

**Telephone**: +1 847-604-9256 M-F 8am-5pm (Central Time Zone)

# Notes

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